UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,172	03/23/2004	Hiroyuki Oyabu	119195	2161

25944 7590 10/22/2008
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
RASHID, DAVID	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
10/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/806,172	OYABU ET AL.	
	Examiner	Art Unit	
	DAVID P. RASHID	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 16 September 2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

[1] In response to applicant's arguments received on Sept. 16, 2008, the following Office Action serves to replace the previous action and serves to clarify the examiner's position. A new shortened statutory time period of three (3) MONTHS and a new statutory period for reply is restarted to begin with the mailing date of this letter. The claim amendments after final was not be entered, and the following Office Action will address the claims as presented on Sept. 16, 2008.

Where for any reason it becomes necessary to remail any action (MPEP § 707.13), the action should be correspondingly redated, as it is the remailing date that establishes the beginning of the period for reply. Ex parte Gourtoff, 1924 C.D. 153, 329 O.G. 536(Comm'r Pat. 1924). For Image File Wrapper (IFW) processing, see IFW Manual.

MPEP 710.06

A supplementary action after a rejection explaining the references more explicitly or giving the reasons more fully, even though no further references are cited, establishes a new date from which the statutory period runs.

MPEP 710.06

Amendments

[2] This office action is responsive to the claim and specification amendment received on September 16, 2008. Claims 1-15 remain pending.

Response to Arguments

[3] Remarks filed September 16, 2008 with respect to claims 1-15 have been respectfully and fully considered, but not found persuasive.

Summary of Remarks

> The Office Action asserts that Scott allegedly discloses the recited first memory. Specifically, the Office Action asserts that the source image memory 1610 of Scott corresponds to the first memory. However, as stated in col. 46, lines 25-32 of Scott, the source image memory 1610 stores a complete bit map of the bi-tonal pixel values that form the source image. Such features do not correspond to the first memory being less than a main scanning direction width of the image data. Furthermore, Hamilton and Shyu do not overcome the above-identified deficiency of Scott.

(Applicant's Remarks at 11, September 16, 2008.)

Examiner's Response

However, the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is the Y (vertical) scanning direction. 46:21-27 wherein the first memory is those memory addresses in item 1610 such that the total size of those memory addresses is less than a main scanning direction width of the image data. Item 1610 itself stores the complete bit map of the bi-tonal pixels values of the source image, and the first memory are those memory addresses in 1610 less than a main scanning direction width of the image data.

Claim Rejections - 35 USC § 103

[4] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[5] **Claims 1, 3,** and **12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,097,518 (issued Mar. 17, 1992, hereinafter "Scott et al.") in view of U.S. Patent No. 5,297,217 (issued Mar. 22, 1994, hereinafter "Hamilton, Jr. et al.").

Regarding **claim 1**, while *Scott et al.* discloses an image processing apparatus for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (4:54-58; 5:61-64 describe in detail within fig. 14 through fig. 16.), the image processing apparatus comprising:

a receiver that receives an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (46:27-32 wherein the receiver is lead 1601 from which the source image memory 1610 receives its pixel value information (image data). The receiver may also be considered the Input-X counter 1620 and Input-Y counter 1630 from which the source image memory 1610 receives its pixel value information (image X,Y address).);

a first memory that stores the pixel value information input in the raster scan order, the first memory being less than a main scanning direction width of the image data (the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is the Y (vertical) scanning direction. 46:21-27 wherein the first memory is those memory addresses in item 1610 such that the total size of those memory addresses is less than a main scanning direction width of the image data. Item 1610 itself stores the complete bit map of the bi-tonal pixels values of the source image, and the first memory are those memory addresses in 1610 less than a main scanning direction width of the image data.);

a second memory that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (47:9-12 wherein the second memory is the scaled image memory 1650. As shown in fig. 16, the input into the scaled image memory 1650 includes that of the X,Y scaled address leads 1677 and 1697, in combination with lead 1647 D_IN which is the data input from the source image. 46:34-41);

a destination address generator that generates destination address information in the second memory to specify a destination location of the pixel value information stored in the first

memory in response to the specified scaling factor (47:6-9 wherein the destination address generator are the counters 1670 and 1690 that generate the X,Y output address unto leads 1677 and 1697 to feed into scaled image memory 1650); and

a transferring unit that transfers the pixel value information from the first memory to the second memory based on the generated destination address information (fig. 16 discloses the control logic 1640 that transfers the pixel value information from the first memory to the second memory based on the generated destination address information. 46:32-36 from the first memory to the control logic and 46:34-41 from the control logic to the second memory. 47:12-17 where the control logic 1640 is responsible for the transfer of image from the first memory to the second is based on the generated destination address information.), *Scott et al.* does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton, Jr. et al. teaches a technique (fig. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (fig. 1, items 7, 10) that receives input of image data (fig. 1, item 8) described in a page description language (leftmost text in fig. 1); and

(ii) a page description language processing section (fig. 1, item 13) that converts (fig. 1, items 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of *Scott et al.* to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by *Hamilton, Jr. et al.* (and thus in effect consequentially allowing the receiver of *Scott et al.* that receives an input of pixel value information of each pixel which is contained in <u>the converted</u> image data to be processed in raster scan order) "…to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.", *Hamilton, Jr. et al.*, 4:30-37 and "…to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.", *Hamilton, Jr. et al.*, 4:42-47.

Regarding **claim 3**, *Scott et al.* discloses the image processing apparatus as claimed in claim 1 further comprising:

a dividing unit that divides the image data into pixel blocks of a size defined based on the capacity of the first memory (The lead 1601 as cited in claim 1 may also be considered the dividing unit that also divides the image data into pixel blocks of a size of exactly "one pixel" based on the capacity of the first memory. As long as the image itself is more than one pixel, the lead 1601 feeding data into the source image memory 1610 is naturally divided by the lead 1601 into separate pixels, and hence can be considered the dividing unit.), wherein

the first memory stores the pixel value information contained in the divided pixel block (46:27-32 wherein the receiver is lead 1601 from which the source image memory 1610 receives its pixel value information (image data).).

Regarding **claim 12**, while *Scott et al.* discloses an image processing method for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (4:54-58; 5:61-64 describe in detail within fig. 14 through fig. 16), the image processing method comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (46:27-32 wherein the receiver is lead 1601 from which the source image memory 1610 receives its pixel value information (image data). The receiver may also be considered the Input-X counter 1620 and Input-Y counter 1630 from which the source image memory 1610 receives its pixel value information (image X,Y address).);

storing the pixel value information input in the raster scan order in a first memory being less than a main scanning direction width of the image data (the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is the Y (vertical) scanning direction. 46:21-27 wherein the first memory is those memory addresses in item 1610 such that the total size of those memory addresses is less than a main scanning direction width of the image data. Item 1610 itself stores the complete bit map of the bi-tonal pixels values of the source image, and the first memory are those memory addresses in 1610 less than a main scanning direction width of the image data.)

generating destination address information in the second memory to specify a destination location of the pixel value information stored in the first memory in response to the specified

scaling factor, wherein the second memory is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (47:6-9 wherein the destination address generator are the counters 1670 and 1690 that generate the X,Y output address unto leads 1677 and 1697 to feed into scaled image memory 1650. 47:9-12 wherein the second memory is the scaled image memory 1650. As shown in fig. 16, the input into the scaled image memory 1650 includes that of the X,Y scaled address leads 1677 and 1697, in combination with lead 1647 D_IN which is the data input from the source image. 46:34-41); and

transferring the pixel value information from the first memory to a second memory based on the generated destination address information (fig. 16 discloses the control logic 1640 that transfers the pixel value information from the first memory to the second memory based on the generated destination address information. 46:34-41 from the control logic to the second memory. 47:12-17 where the control logic 1640 is responsible for the transfer of image from the first memory to the second is based on the generated destination address information.), *Scott et al.* does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton, Jr. et al. discloses a technique (fig. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (fig. 1, items 7, 10) that receives input of image data (fig. 1, item 8) described in a page description language (leftmost text in fig. 1); and

(ii) a page description language processing section (fig. 1, item 13) that converts (fig. 1, items 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of *Scott et al.* to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by *Hamilton, Jr. et al.* (and thus in effect consequentially allowing the receiver of *Scott et al.* that receives an input of pixel value information of each pixel which is contained in <u>the converted</u> image data to be processed in raster scan order) "...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.", *Hamilton, Jr. et al.*, 4:30-37 and "...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.", *Hamilton, Jr. et al.*, 4:42-47.

Regarding **claim 13**, while *Scott et al.* discloses an image processing method for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (refer to references/arguments cited in claim 12), the image processing method comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (refer to references/arguments cited in claim 12);

storing the pixel value information input in the raster scan order in a first memory being less than the main scanning direction width of the image data (refer to references/arguments cited in claim 12);

generating a source address information in the first memory that stores the pixel value information to be retained in each address in the second memory, that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction, based on an address shift amount determined in response to the specified scaling factor (46:43-45 wherein the source address generating unit are the registers 1670 and 1690 and their preceding items); and

transferring the pixel value information from the first memory to a second memory based on the generated source address information (refer to references/arguments cited in claim 12), *Scott et al.* does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton, Jr. et al. teaches a technique (fig. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (fig. 1, items 7, 10) that receives input of image data (fig. 1, item 8) described in a page description language (leftmost text in fig. 1); and

(ii) a page description language processing section (fig. 1, item 13) that converts (fig. 1, items 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of *Scott et al.* to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by *Hamilton, Jr. et al.* (and thus in effect consequentially allowing the receiver of *Scott et al.* that receives an input of pixel value information of each pixel which is contained in <u>the converted</u> image data to be processed in raster scan order) "...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.", *Hamilton, Jr. et al.*, 4:30-37 and "...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.", *Hamilton, Jr. et al.*, 4:42-47.

Regarding **claim 14**, while *Scott et al.* discloses an image processing program stored on a computer-readable medium comprising computer executable instructions which, when executed by a computer, causes the computer to perform an (Refer to references/arguments cited in claim

12. *Scott et al.* discloses the present invention as an image processing program for realizing a processing to a computer as cited 10:31-34.) image processing method comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order; storing the pixel value information input in the raster scan order in a first memory being less than a main scanning direction width of the image data (refer to references/arguments cited in claim 12);

generating destination address information in the second memory to specify a destination location of the pixel value information stored in the first memory in response to the specified scaling factor, wherein the second memory is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (refer to references/arguments cited in claim 12); and

transferring the pixel value information from the first memory to a second memory based on the generated destination address information (refer to references/arguments cited in claim 12), *Scott et al.* does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton, Jr. et al. teaches a technique (fig. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (fig. 1, items 7, 10) that receives input of image data (fig. 1, item 8) described in a page description language (leftmost text in fig. 1); and

(ii) a page description language processing section (fig. 1, item 13) that converts (fig. 1, items 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of *Scott et al.* to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by *Hamilton, Jr. et al.* (and thus in effect consequentially allowing the receiver of *Scott et al.* that receives an input of pixel value information of each pixel which is contained in <u>the converted</u> image data to be processed in raster scan order) "...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.", *Hamilton, Jr. et al.*, 4:30-37 and "...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.", *Hamilton, Jr. et al.*, 4:42-47.

Regarding **claim 15**, while *Scott et al.* discloses an image processing program stored on a computer-readable medium comprising computer executable instructions which, when executed by a computer, causes the computer to perform an (Refer to references/arguments cited in claim

12. *Scott et al.* discloses the present invention as an image processing program for realizing a processing to a computer as cited 10:31-34.) image processing program comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (refer to references/arguments cited in claim 12);

storing the pixel value information input in the raster scan order in a first memory being less than the main scanning direction width of the image data (refer to references/arguments cited in claim 12);

generating a source address information in the first memory that stores the pixel value information to be retained in each address in the second memory, that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction, based on an address shift amount determined in response to the specified scaling factor (refer to references/arguments cited in claim 13); and

transferring the pixel value information from the first memory to a second memory based on the generated source address information (refer to references/arguments cited in claim 12), *Scott et al.* does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton, Jr. et al. teaches a technique (fig. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (fig. 1, items 7, 10) that receives input of image data (fig. 1, item 8) described in a page description language (leftmost text in fig. 1); and

(ii) a page description language processing section (fig. 1, item 13) that converts (fig. 1, items 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of *Scott et al.* to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by *Hamilton, Jr. et al.* (and thus in effect consequentially allowing the receiver of *Scott et al.* that receives an input of pixel value information of each pixel which is contained in <u>the converted</u> image data to be processed in raster scan order) "...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.", *Hamilton, Jr. et al.*, 4:30-37 and "...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.", *Hamilton, Jr. et al.*, 4:42-47.

[6] **Claims 2** and **4-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Scott et al.* in view of U.S. Patent No. 5,825,367 (issued Oct. 20, 1998, hereinafter "Shyu et al.") and *Hamilton, Jr. et al.*

Regarding **claim 2**, while *Scott et al.* discloses an image processing apparatus for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (refer to references/arguments cited in claim 1), the image processing apparatus comprising:

a receiver that receives an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (refer to references/arguments cited in claim 1);

a first memory that stores the pixel value information input in the raster scan order, the first memory being less than a main scanning direction width of the image data (the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is the Y (vertical) scanning direction. 46:21-27 wherein the first memory is those memory addresses in item 1610 such that the total size of those memory addresses is less than a main scanning direction width of the image data. Item 1610 itself stores the complete bit map of the bi-tonal pixels values of the source image, and the first memory are those memory addresses in 1610 less than a main scanning direction width of the image data.);

a source address generating unit that generates a source address information in the first memory that stores the pixel value information to be retained in each address in the second memory based on an address shift amount determined in response to the specified scaling factor (46:43-45 wherein the source address generating unit are the registers 1670 and 1690 and their preceding items (all of the items above the output registers in fig. 16)); and

a transferring unit that transfers the pixel value information from the first memory to the second memory based on the generated source address information (47:9-12 wherein the transferring unit is the lead 1655.), *Scott et al.* does not teach

(i) a second memory that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction;

(ii) an image data input section that receives input of image data described in a page description language; and

(iii) a page description language processing section that converts the page description language input image data.

Shyu et al. discloses an apparatus for real time two-dimensional scaling of a digital image (2:10-12) that teaches a second memory that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (1:57-63.).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus of *Scott et al.* to include a second memory of Shya that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction as taught by *Shyu et al.* to have a memory that completely contains the capacity of the scaled image, and "…to perform variable expansion and shrinkage of the image…", *Shyu et al.*, column 1, line 53.

Hamilton, Jr. et al. teaches a technique (fig. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(ii) an image data input section (fig. 1, items 7, 10) that receives input of image data (fig. 1, item 8) described in a page description language (leftmost text in fig. 1); and

(iii) a page description language processing section (fig. 1, item 13) that converts (fig. 1, items 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of *Scott et al.* in view of *Shyu et al.* to include (ii) an image data input section that receives input of image data described in a page description language; and (iii) a page description language processing section that converts the page description language input image data as taught by *Hamilton, Jr. et al.* (and thus in effect consequentially allowing the receiver of *Scott et al.* in view of *Shyu et al.* that receives an input of pixel value information of each pixel which is contained in <u>the converted</u> image data to be processed in raster scan order) "...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.", *Hamilton, Jr. et al.*, 4:30-37 and "...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.", *Hamilton, Jr. et al.*, 4:42-47.

Regarding **claim 4**, *Scott et al.* discloses further comprising:

a dividing unit that divides the image data into pixel blocks of a size defined based on the capacity of the first memory (The lead 1601 as cited in claim 1 may also be considered the dividing unit that also divides the image data into pixel blocks of a size of exactly "one pixel" based on the capacity of the first memory. As long as the image itself is more than one pixel, the lead 1601 feeding data into the source image memory 1610 is naturally divided by the lead 1601 into separate pixels, and hence can be considered the dividing unit.), wherein the first memory stores the pixel value information contained in the divided pixel block (46:34-39.).

Regarding **claim 5**, *Scott et al.* discloses wherein the source address generating unit generates the source address using an offset value (46:51-55 where the offset value is Output_X and Output_Y from the multiplexors 1669 and 1689.);

the offset value is provided based on a cumulative addition calculation of the address shift amount (As disclosed in fig. 16, offset values Output_X and Output_Y are based on a cumulative addition calculation of the address shift amounts X-OUTMOVE and Y-OUTMOVE.); and

the source address generating unit includes: a retaining unit that retains at least a decimal place of the offset value at a point after the pixel value information is transferred (46:61-64 wherein the retaining unit are the leads 1673 and 1693.).

Regarding **claim 6**, *Scott et al.* discloses wherein the source address generating unit generates the source addresses using respective offset values relative to the main scanning direction and the subscanning direction (It has been assumed for examination purposes that the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is

the Y (vertical) scanning direction. 46:51-55 where the offset value is Output_X and Output_Y from the multiplexors 1669 and 1689.);

the respective offset values are provided by performing a cumulative addition calculation of the address shift amounts responsive to the scaling factor in the main scanning direction and that in the subscanning direction (As disclosed in fig. 16, offset values Output_X and Output_Y are based on a cumulative addition calculation of the address shift amounts X-OUTMOVE and Y-OUTMOVE.); and

the source address generating unit includes: a first retaining unit that retains at least a decimal place of the offset value relative to the main scanning direction at a point after the pixel value information is transferred; and a second retaining unit that retains at least a decimal place of the offset value relative to the subscanning direction (46:61-64 wherein the retaining unit are the leads 1673 and 1693.).

Regarding **claim 7**, *Scott et al.* discloses wherein the source address generating unit further includes:

an initial value retaining unit that retains at least the decimal place of the offset value at the point when the pixel value information has been transferred as much as a capacity of the second memory as an initial value of a next source address calculation, if the second memory cannot retain the pixel value information as much as the subscanning direction width of the scaled image data (46:61-64. Regardless of whether the pixel value information has been transferred as much as a capacity of the second memory as an initial value of a next source address calculation, if the second memory cannot retain the pixel value information as much as the subscanning direction width of the scaled image data, the initial value retaining unit (again,

leads 1673 and 1693) retains at least the decimal place of the offset value by transferring the full value every time. Thus, if there ever was a case from which the pixel value information had been transferred as much as a capacity of the second memory as an initial value of a next source address calculation, if the second memory cannot retain the pixel value information as much as the subscanning direction width of the scaled image data, the initial value retaining unit will automatically retain the full offset value which includes at least the decimal place of the offset value.).

Regarding **claim 8**, *Scott et al.* discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. 43:3-11.); and

the source address generating unit updates the offset value by adding the address shift amount to the current offset value (As disclosed in fig. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.), and increments the source address by one if the updated offset value becomes one or more (As mentioned above, the updated offset value is the "full value" being currently updated on lead 1673. Every cycle requires the full value to be added to the reciprocal of the scaling factor (X-OUTMOVE) through adders 1660 and 1680. The combination is then taken through the multiplexer and output register before the full integer value is represented as the address, and the full value is fed back into the adder.

To show that the source address generating unit increments the source address by one if the updated offset value becomes one or more, let us take the scaling factor of 2/3 (reducing the source image 66%) for example. The X-OUTMOVE value is the reciprocal 3/2 (=1.5), and as

cited starting from column 47, line 12, divider 1666 initially divides the X-OUTMOVE by 2 before proceeding with the cycles:

Cycle 1: 1 (first source address, full value) + 0.75 (1.5 (X-OUTMOVE) / 2 by divider) = 1.75 (full value) = 1 (integer value)

Cycle 2: 1.75 (full value) + 1.5 (X-OUTMOVE) = 3.25 (full value) = 3 (integer value)

Cycle 3: 3.25 + 1.5 = 4.75 = 4 (integer value)

We then obtain the set {1, 3, 4, 6, 7, 9, 10, 12, 13, …} to obtain the source address locations of the original image to become the scaled image by 2/3. From the set, it can easily be shown a "jump in the address by one" (ex. from 7 to 9, as opposed to "an increment by one" like 9 to 10) occurs when the decimal value of the increasing full value exceeds the value of one (ex. for the jump in source address from 7 to 9, the full value jumps from 7.75 to 9.25, meaning the integer value of the difference in full values is exactly one (9.25-7.75 = 1.5 = 1 (integer value)).).

Regarding **claim 9**, *Scott et al.* discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. 43:3-11.); and

the source address generating unit updates the offset value by adding the address shift amount to the current offset value (As disclosed in fig. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.), and increments the source address by one if the updated offset value becomes one or more (refer to references/arguments cited in claim 8).

Regarding **claim 10**, Scott discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. "As shown, upon entry into process 1400, step 1405 is first performed which assigns the reciprocals of the desired X and Y scale factors, i.e. X.sub.-- SCALEFACTOR and Y.sub.-- SCALEFACTOR, to variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE. X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE store the size of the movement, which is fractional for reduction scaling, in the scaled image that corresponds to a one pixel movement in the input image.", column 43, line 3.); and

the source address generating unit updates the offset value by adding the address shift amount to the current offset value (As disclosed in FIG. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.), and increments the source address by one if the updated offset value becomes one or more (refer to references/arguments cited in claim 8).

Regarding **claim 11**, Scott discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. "As shown, upon entry into process 1400, step 1405 is first performed which assigns the reciprocals of the desired X and Y scale factors, i.e. X.sub.-- SCALEFACTOR and Y.sub.-- SCALEFACTOR, to variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE. X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE store the size of the movement, which is fractional for reduction scaling, in the scaled image that corresponds to a one pixel movement in the input image.", column 43, line 3.); and

the source address generating unit

updates the offset value by adding the address shift amount to the current offset value (As disclosed in FIG. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.),

increments the source address by one if the updated offset value becomes one or more (refer to references/arguments cited in claim 8),

refers to a location of the pixel value information stored in the first memory on the image data to be processed ("The integer address outputs produced by counters 1670 and 1690 are applied by leads 1677 and 1697, respectively, to a common address input to scaled image memory 1650.", column 47, line 6), and

sets the offset value to the initial value retained in the initial value retaining unit if the location satisfies a predetermined condition ("Prior to the start of reduction scaling, the contents of registers 1670 and 1690 are suitably initialized by control logic 1640 through multiplexors 1669 and 1689, to one half the values of variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE, respectively. Specifically, an INIT pulse applied to a control (C) input of each multiplexor cause multiplexors 1669 and 1689 to route one half of the value of variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE to the inputs of Output.sub.-- X register 1670 and Output.sub.-- Y register 1690.", column 47, line 12. In essence, if the location satisfies the predetermined condition of being null or 0 (prior to the starting of reduction scaling), the offset value is set to the initial value retained in the initial value retaining unit to be one half the values of variables X-OUTMOVE and Y-OUTMOVE.).

Conclusion

[7] All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

[1] Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

David P Rashid
Examiner
Art Unit 26244

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624